Mining Operations
Conservation Division
P. O. Box 26124
Albuquerque, New Mexico 87125

May 2, 1978

William E. Gray, Director
Environmental Affairs
The Anaconda Company
660 Bannock Street
Denver, Colorado 80204

Re: RECLAMATION REQUIREMENT
Jackpile-Paguate Uranium Mine
The Anaconda Company

Dear Mr. Gray:

Thank you for the April 24th discussions and April 27th inspection of the reclamation at the Jackpile-Paguate Mine. They were very helpful in clearing up some of the questions I had concerning Anaconda's reclamation plan.

I fully realize that reclamation of the mine is a difficult and expensive proposition and that the lack of similar reclamation work in New Mexico makes trial and error the most viable procedure in many cases. To date Anaconda has done a good job. However, certain sections of the reclamation plan need further elaboration and it will be necessary to perform additional environmental monitoring to establish the necessary reclamation procedures. In this light, the enclosed requirements are presented. You have previously indicated that some of the required information has already been compiled and that much of the monitoring has been contemplated. I hope the additional requirements will not be too burdensome. If you have any questions, please contact me.

Sincerely yours,

Marc Nelson
Environmental Scientist, SRMA

ENCLOSURE

MN/mfs

ENVIRONMENTAL MONITORING

AIR

The small amount of radiological air quality data taken at the mine does not clearly establish that a problem does or does not exist. It will therefore be necessary to perform additional monitoring until this question is resolved. The following guidelines should be used in establishing your program. I hope the two stations you presently have will fit into this program.

1. Measure radon gas (not radon daughters) averaged over a 48-hour period each month at the following locations:

   a) near the center of two reclaimed waste piles

   b) in the town of Paguate

   c) at one active main vent hole

   d) at one other location as needed to encircle the mine

2. Take monthly measurements over a 48-hour period with a large volume air sampler at or near the same locations as the above. Analyze for suspended particulates, total uranium, thorium-230, radium-226, lead-210, gross alpha and gross beta.

3. Submit your plan to this office for approval. Begin the monitoring in June if possible.

4. Submit the data to this office quarterly and in the same units as the applicable regulations.

5. At the end of one year, submit an evaluation of the data to this office and if the data warrents, you may request to terminate or reduce the program at that time.

WATER

There was previously some confusion about the status of your water monitoring program. To prevent this from reoccuring, please begin monitoring as soon as possible and use the following minimal guidelines to develope your program.

1. Surface water monitoring locations:

   a) on the Paguate upstream from the mining area

   b) on the Moquino upstream from the mining area

   c) on the Paguate just above its confluence with the Moquino

   d) on the Moquino just above its confluence with the Paguate

   e) just below the mining area

   f) at the mouth of Oak Canyon Wash

   g) at the Paguate Reservoir

2. Groundwater monitoring locations:

   a) Continue to monitor the Jackpile Shop Well, Paguate Shop Well and Well Number 4.

   b) Install new monitoring wells as discussed on page 4.2 - 51 of the Mining and Reclamation Plan.

3. Monitoring parameters and frequency:

   a) Monthly monitor gross alpha, gross beta, total uranium, radium-226 and total radium at all locations

b) Quarterly monitor the following at all locations:

PH	Mo
specific conductance	V
Ca	Cd
Mg	Pb
Na	Hg
K	Ni
Acidity	Se
HCO_3	NO_3
SiO_2	NO_2
SO_4	As
F	Cv
Cl	Ba
Fe	Total dissolved solids
Mn	
Cu	
Zn	

4. Submit your plan to this office for approval by June 1 if possible.

5. Submit the data to this office quarterly in the units of the applicable regulations.

6. If these guidelines hinder the effectiveness of other Federal or State monitoring requirements, I am amenable to change.

ADDENDUMS TO THE MINE PLAN

1. Water

The post reclamation drainage patterns and associated affects were inadequately addressed in the reclamation plan. Please submit an addendum to the plan including the following:

a) a map showing the post reclamation drainage patterns including estimated slopes of the ground surface and the location and heights of all remaining highwalls.

b) For those areas that have closed drainages, estimate the location, size and volume of any standing water that may occur. Discuss the possibility of radiological contamination of these ponds and ways to prevent it.

c) For those waste piles that are near well defined ephemeral or perennial drainage channels, discuss the possibility of the piles being eroded and the procedures that Anaconda will use to mitigate the erosion.

2. Vegetation

Please provide an analysis showing that the revegetation species are not of the type that concentrate selenium, radium, or uranium.

3. Stabilization of Waste Piles

Stabilization of the waste piles slopes will be one of the most difficult goals of reclamation to achieve but it is also one of the most important. Past stabilization procedures at the mine have been inadequate and alternate procedures were inadequately addressed in the reclamation plan. Please submit an addendum to the reclamation plan discussing alternate stabilization procedures including benching, decreasing slopes, placing significantly more cover, using biodegradable matting, adding large rocks to the cover and more intensely revegetating.

4. Waste Pile Radiological Report

It is unlikely that the waste piles will release significant quantities of radon after reclamation but the possibility is great enough to warrant investigation. In this light, please submit the following information:

a) Data on and summary of the radiological content of all previously reclaimed waste piles. Analysis should include selenium, radium 226, total radium, total uranium, gross alpha and gross beta.

b) Amount and type of cover placed on these waste piles.

c) Continue to provide the above information as additional waste piles are reclaimed.

d) An evaluation of the amount of cover needed to prevent the release of significant quantities of radon from the waste piles and the criteria needed for this evaluation.

5. Reclamation Report

Please submit to this office a yearly reclamation report each June. It should include a map and discussion of the reclamation work done in the preceding year along with an evaluation of its success. The discussion should include pertinent topics such as top soil thickness, vegetation types and percent survival, re-vegetation procedures, slope stability, drainage reestablishment and highwall stability. This is not intended to be an exhaustive evaluation. Include only enough detail to provide a good general understanding of the reclamation status and success. The report for June 1978 should include all past reclamation so that we may be brought up to date.